

### **REMARKS**

Currently claims 1-2, 5 and 8-25 are pending. Claims 17-20 are withdrawn. By this Amendment, claims 1, 5, 9, 13, 16, 17, 18, 19, 21, 22, 23 and 25 are amended, no claims are cancelled, and no new claims are added. In view of the above amendments and following remarks, reconsideration of the outstanding rejections are respectfully requested.

#### **I. Claim Objections**

The Examiner objects to claims 5 and 13 based on informalities. Specifically the strikethroughs, indicating removed characters, were not apparent in the number “4” since the strikethrough is obscured by the horizontal bar in the number 4. In order to more clearly show the removal of the number 4 double brackets are used to indicate the removal of the character [[4]], and clearly indicate that claim 5 and 13 depend from claim 1.

Accordingly, Applicants respectfully request the withdrawal of the objection to claims 5 and 13 based on informalities.

#### **II. Claim Rejections 35 USC § 112, Second Paragraph**

The Examiner rejects claims 1-2, 5, 8-16 and 21-25 as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as the invention. This rejection is respectfully traversed.

Specifically claims 1, 22, 23 and 25 recited the limitation “metatype Object”. The Examiner alleges that there was not sufficient antecedent support for this limitation. The Applicants amend these claims to recite “metadata type” and have corrected any antecedent basis therewith.

Additionally, in claim 1, “said branch table” is used throughout, correcting the inconsistent use of “the branch table”.

Accordingly, Applicants respectfully request the withdrawal of the claim rejections of 1-2, 5, 8-16 and 21-25 under 35 USC § 112, Second Paragraph.

### **III. Claim Rejections 35 USC § 102 and §103**

The Examiner rejects claims 1-2, 5, 8-9, 12-14, 16 and 21-25 under 35 USC § 102(b) as allegedly being anticipated by “Relational Databases for Querying XML Documents: Limitations and Opportunities” Proc. Of the 25<sup>th</sup> VLDB (1999) by Shanmugasundaram et al. (hereinafter “Shanmugasundaram”); and rejects claim 10 under 35 USC § 103(a) as allegedly being unpatentable over Shanmugasundaram in view of “Point-versus Interval-based Temporal Data Models” Proc. Of the 14<sup>th</sup> Inter. Conf. on Data Eng. (1998) by Bohlen et al. (hereinafter “Bohlen”); and rejects claim 11 under 35 USC § 103(a) as allegedly being unpatentable over Shanmugasundaram in view of “ACM Transactions on Information and System Security” Vol. 5, No. 2, (May 2002) by Damiani et al. (hereinafter “Damiani”); and rejects claim 15 under 35 USC § 103(a) as allegedly being unpatentable over Shanmugasundaram. These rejections are respectfully traversed.

The pending independent claims 1, 22, 23 and 25 are directed to: “A computer program product having program code stored on a computer readable medium... adapted to provide a database of information objects” are amended to recite *inter alia*

an individual branch has:

a metadata type, which is selected from a predetermined and limited set of  $n$  different metadata types, said predetermined and limited set being independent of content in or type of the information object, and which metadata type represents one respective hierarchical level in said hierarchical structure;

a metadata value; and

an arbitrary number of other branches, of any hierarchical level strictly subordinate to the hierarchical level of said individual branch, connected to said individual branch as children thereof, said arbitrary number including zero branches;

wherein said database comprises a branch table having a fixed structure of columns that correspond to the  $n$  different metadata types and each information object is stored in said database in the form of an  $n$ -field data

structure is stored as a row in said branch table, said fixed structure being independent of content in or type of the information object;

...

search said database so as to find information objects, if any, which contain a branch hierarchy that makes the one specified in said declarative language; and further adapted to comprise the steps of:

- a) receiving a search query;
- b) transforming the search query into a search hierarchy of row searches and joins, said joins occurring within said branch table,

Support for these amendments is found throughout the Specification and makes clear that the claimed invention relates to *a strict hierarchy of six or  $n$  different metadata types:  $o$  (object);  $r$  (relation);  $k$  (key);  $a$  (attribute);  $t$  (type) and  $v$  (value)* for branch table structure independently of the information object. See, Specification, paragraphs [0053] and [0056]. The inventive system operates with  $n$  types to create only one single table comprising the allowed metadata types.

Additionally, the Specification makes clear that the metadata types are independent of content in, or type of the information object. The claimed branch table is associated with exactly one pre-determined and limited set of  $n$  different metadata types for all information objects regardless of the type of information and utilizes one table containing all the data in the given database. See, Specification, paragraph [0124]. The metadata types are generic types used for modeling the information objects and are restricted to the exactly one pre-determined, or fixed, object structure.

Further, the pending independent claims are amended to recite the join occurring within the branch table. Support for this amendment may be found throughout the Specification, and may be found for example at the same sections listed above for a branch table. That is, it is clear that the claimed invention relates to one branch table structure independently of the information object.

Applicants respectfully assert that Shanmugasundaram fails to anticipate Applicants' claimed invention, at least because Shanmugasundaram does not teach or suggest the claimed feature of "a metadata type, which is selected from a predetermined and limited set of  $n$  different

metadata types, said predetermined and limited set being independent of content in or type of the information object, and which metadata type represents one respective hierarchical level in said hierarchical structure” and “said database comprises a branch table having a fixed structure of columns that correspond to the  $n$  different metadata types and each information object is stored in said database in the form of an  $n$ -field data structure is stored as a row in said branch table, said fixed structure being independent of content in or type of the information object” and “transforming the search query into a search hierarchy of row searches and joins, said joins occurring within said branch table,” as recited in independent claim 1, for example.

Although the Examiner has argued Shanmugasundaram teaches “a metadata type, which is selected from a predetermined and limited set of  $n$  different metadata types and which [metadata] type represents one respective hierarchical level in said hierarchical structure” at page 4 of the Action, the Examiner bases his argument on Section 2.2 and Figure 2 of Shanmugasundaram. In fact, the Examiner argues that hierarchical structure in Shanmugasundaram at Section 2.2, “indicate that the objects have a limited set metadata types, specified in the DTD, and which are identified as [an] element or sub-element...” However, Shanmugasundaram discusses no such limitation. Shanmugasundaram teaches utilizing as many tables as there are different object types. Additionally Section 2.2 and Figure 2 of Shanmugasundaram disclose different document type descriptors (DTDs) and these DTDs are relied upon for the different pre-determined tables. With the claimed invention, a fixed branch table structure, wherein the fixed structure is independent of content in, or type of the information object, does not require or rely on DTDs.

The independent claims are amended to recite the join occurring within *the* branch table. The Examiner alleges a “joins among relations” as taught by Shanmugasundaram is equivalent to “joins at the metadata type of a particular branch” as recited by the claimed invention. Applicants respectfully disagree. The “joins among relations” of Shanmugasundaram is a join between two different tables. See, Shanmugasundaram in Section 3.3. Shanmugasundaram discusses “a joint” to be possible between elements of different hierarchical levels of different objects listing, for example “the article.author relation has a foreign key article.author.parentID that joins authors with articles...” and that “article” is an object type whereas “author” may be a

parameter of the object types “book” and “article”. Shanmugasundaram also lists: “B.bookID = A.parentID and A.parentCode = 0” are only conditions set for one of the tables.

However the claimed invention does not require that the declared subordinate metadata types correspond to the DTDs and associated XML. Instead the instant invention recites “an arbitrary number of other branches, of any hierarchical level strictly subordinate to the hierarchical level of said individual branch, connected to the individual branch as children thereof, said arbitrary number including zero branches”. Therefore the Examiner is incorrect when arguing that Figure 1 and Section 2.1 of Shanmugasundaram disclosure of these features. Specifically Shanmugasundaram fails to disclose the ability to choose “any hierarchical level strictly subordinate to the hierarchical level of said individual branch”.

Shanmugasundaram does not anticipate the claimed invention for at least the basis set forth above concerning the independent claims 1, 17, 22, 23 and 25. With regards to dependent claims 2, 5, 8-9, 12-14, 16, 21 and 24, Applicants respectfully assert that these claims are patentably distinct over Shanmugasundaram for at least the basis asserted above with regards to the independent claims. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 1-2, 5, 8-9, 12-14, 16 and 21-25 under 35 USC § 102(b) over Shanmugasundaram.

With regards to claim 10, Bohlen fails to provide what is lacking with regards to Shanmugasundaram to render claim 10 obvious for at least the basis asserted above with regards to the independent claims. Applicants respectfully assert that claim 10 is patentably distinct over the asserted combination of Shanmugasundaram in view of Bohlen for at least the same basis asserted above with regards to the independent claims. Accordingly, Applicants respectfully request the withdrawal of the rejection of claim 10 under 35 USC § 103(a) over Shanmugasundaram in view of Bohlen.

With regards to claim 11, Damiani fails to provide what is lacking with regards to Shanmugasundaram to render claim 11 obvious for at least the basis asserted above with regards to the independent claims. Applicants respectfully assert that claim 11 is patentably distinct over the asserted combination of Shanmugasundaram in view of Damiani for at least the same basis

asserted above with regards to the independent claims. Accordingly, Applicants respectfully request the withdrawal of the rejection of claim 10 under 35 USC § 103(a) over Shanmugasundaram in view of Damiani.

With regards to claim 15, Shanmugasundaram fails to render claim 15 obvious for at least the same basis that Shanmugasundaram failed to anticipate independent claims. Applicants respectfully assert that claim 15 is patentably distinct over Shanmugasundaram for at least the same basis asserted above with regards to the independent claims. Accordingly, Applicants respectfully request the withdrawal of the rejection of claim 15 under 35 USC § 103(a) over Shanmugasundaram.

#### **IV. Conclusion**

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact William D. Titcomb Reg. No. 46,463 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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